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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/675,911

09/29/2003

Avinash S. Patwardhan

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08/15/2006

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EXAMINER

JACOB, MARY C

ART UNIT

PAPER NUMBER

2123

DATE MAILED: 08/15/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/675,911	PATWARDHAN ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Mary C. Jacob	2123	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 29 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-29 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 March 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>7/22/04, 2/10/06</u> .  | 6) <input type="checkbox"/> Other: _____                                    |

### **DETAILED ACTION**

1. Claims 1-29 have been presented for examination.

#### ***Drawings***

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: 711.
3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "2205" has been used in both Figures 22 and 24. From the specification, it appears that element "2205" in Figure 24 should be labeled "2405".
4. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

#### ***Specification***

5. The disclosure is objected to because of the following informalities. Appropriate correction is required.

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6. Page 8, line 7 points to Figure 2, element 201 as "design store", however, it should point to element 205.

### ***Claim Objections***

7. Claims 1, 3, 12, 16 and 26 are objected to because of the following informalities. Appropriate correction is required.

8. Claim 1, lines 4 and 7 recite, "calculating the outflow", it would be better if written, "calculating an outflow".

9. Claim 1, line 17 recites, "that time increment", it would be better if written, "a time increment".

10. Claim 1, line 19 recites, "that time increment", it would be better if written, "the time increment".

11. Claim 3, line 4 recites, "the placement", it would be better if written, "on placement".

12. Claim 12 recites, "an area represents multiple occurrences similar areas". The wording is unclear and is interpreted to read, "an area represents multiple occurrences of similar areas".

13. Claim 16, line 2 recites, "having areas of each land use". This wording is unclear.

14. Claim 16, line 9 recites, "that time increment", it would be better if written, "a time increment".

15. Claim 16, line 11 recites, "that time increment", it would be better if written, "the time increment".

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16. Claim 26, line 2 recites, "having areas of each land use". This wording is unclear.

***Claim Rejections - 35 USC § 112***

17. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

18. Claims 1-26 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

19. Claim 1 recites the limitation "that area" in line 4. There is insufficient antecedent basis for this limitation in the claim.

20. Claim 1 recites the limitation "that source" in line 7. There is insufficient antecedent basis for this limitation in the claim.

21. Claim 1, line 10 recites the limitation, "an area". It is unclear as to whether this "area" is referring to the "area" as disclosed in line 4, or whether this is another "area" not previously disclosed.

22. Claim 1, line 12 recites, "receiving attributes", however, it is unclear as to whether the "attributes" refer to the "attributes" as disclosed in line 5, or whether these are "attributes" that were not previously disclosed.

23. Claim 1, lines 16 and 18 recite the limitation "the object associated with each source of water" and "the object associated with each area". However, it is unclear as to whether these objects refer to the "objects representing areas" and "objects

representing sources of water” as disclosed in lines 3 and 6, or the “associated object” of each area and water source as disclosed in line 11.

24. Claim 4, line 1, and Claim 12, line 1 recite, “an area”, however, it is unclear as to what “area” in Claim 1 is being referred to since “that area” is disclosed in Claim 1, line 4 and “an area” is disclosed in Claim 1, line 10, or, whether “an area” is a new area not previously disclosed.

25. Claim 15, line 5 recites, “objects”, however, it is unclear as to whether this is referring to “objects representing areas of land use” or “objects representing sources of water”.

26. Claim 16, line 3 recites, “the flow of water dependencies”. There is insufficient antecedent basis for this limitation in the claim.

27. Claims 22 and 23 further limit “an impervious area”, however, there is no prior recitation of “an impervious area” in Claim 16, so it is unclear as to what these claims are further limiting or where “an impervious area” was previously recited.

28. Claims 24 and 25 disclose “providing an icon for each type”...of “impervious area” and “pervious area”, however, there is no prior recitation of “pervious area” or “impervious area” in Claim 16, so it is unclear as to what these claims are further limiting or where “pervious area” and “impervious area” were previously recited.

29. Claim 26 line 3 recites, “the flow of water dependencies”. There is insufficient antecedent basis for this limitation in the claim.

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30. Due to the number of 35 U.S.C. 112, second paragraph rejections, the examiner has provided a number of examples of the claim deficiencies in the above rejection(s), however, the list of rejections may not be inclusive. Applicant should refer to these rejections as examples of deficiencies and should make all necessary corrections to eliminate the 35 U.S.C. 112, second paragraph problems and place the claims in proper format.

Due to the vagueness and a lack of a clear definition of the terminology and phrases used in the specification and claims, the claims have been treated on their merits as best understood by the examiner.

***Claim Rejections - 35 USC § 103***

31. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

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consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

32. Claims 1, 2, 5, 7, 9-12, 16, 19-23 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haitjema ("Modeling Lake-Groundwater Interactions in GFLOW 2000", March 4, 2002) in view of Deal et al ("Ecological Sustainability and Urban Dynamics: A Disaggregated Modeling Approach to Sustainable Design", 7<sup>th</sup> International Conference on Computers in Urban Planning and Urban Management, Honolulu, HI, 2001).

33. As to Claims 1, 16 and 26, Haitjema teaches the simulation of inflow and outflow from a lake wherein objects representing sources of water calculate the outflow and inflow of water to a lake based on the inflow and outflow from sources of water (page 4 of 15, "Defining Inlet and Outlet Streams"; page 6 of 15, first paragraph; page 7 of 15, "Finally, calculate the total flow...and that precipitation and evapotranspiration are combined into the net recharge rate that the lake receives."); generating a graphical representation of flow of water dependencies between the lake and sources of water, the dependencies indicating an outflow from a source of water to an inflow to the lake (page 4 of 15, "Defining Inlet and Outlet Streams"; page 6 of 15, first paragraph); receiving attributes describing the lake and the sources of water (page 4 of 15, "Defining Inlet and Outlet Streams"; page 6 of 15, first paragraph; page 7 of 15, "After these inspections...and that precipitation and evapotranspiration are combined into the net recharge rate that the lake receives."); and performing a simulation for a plurality of time increments to calculate the outflow from the lake for those time increments (page 7 of



15, last paragraph-page 8 of 15, first 2 sentences; pages 11, 12 and 13 of 15, "Solution Strategies and Lake Water Balance").

34. Haitjema does not expressly teach objects representing areas of land use for calculating the outflow of water for an area based on the inflow of water and attributes of the object being areas of land use.

35. Deal et al teaches the Land Use Evolution and Impact Assessment model (LEAM), a collaborative and disaggregated approach to modeling the urban environment that that allows researchers and planning professionals to address urban dynamics in greater detail at a greater variety of scales and interfaces. Deal et al teaches objects representing areas of land use for calculating the influence of the areas of land use on a watershed based on the inflow of water and attributes of the object (page 12 of 25, "Model drivers represent the dynamic interactions between the urban system and the surrounding landscape."; pages 15 and 16 of 25, "Application" and "Model Results").

36. Haitjema and Deal et al are analogous art since they are both directed to the modeling of hydrological properties and the interaction between different components of a landscape.

37. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the simulation of inflow and outflow from a lake as taught by Haitjema to include the objects representing areas of land use for calculating the influence of the areas of land use on a watershed based on the inflow of water and attributes of the object as taught by Deal et al since Deal et al teaches the Land Use

Evolution and Impact Assessment model (LEAM), a collaborative and disaggregated approach to modeling the urban environment that that allows researchers and planning professionals to address urban dynamics in greater detail at a greater variety of scales and interfaces.

38. As to Claims 2, 12, 21, 22 and 23, Haitjema and Deal et al teach: wherein the areas include impervious and pervious areas, wherein an area represents multiple occurrences of similar areas, wherein an impervious area is a road, and wherein an impervious area is a roof (Deal: page 16 of 25, "Existing Land Use" and explanation of Figure 6), where the residential and commercial properties have roofs.

39. As to Claims 5 and 19, Haitjema and Deal et al teach: wherein the attributes of a source of water include periodic rainfall amounts (Haitjema: page 8 of 15, "Line-sink Lakes, sentence 4).

40. As to Claim 7, Haitjema and Deal et al teach: wherein outflow includes evapotranspiration (Haitjema, page 8 of 15, "Line-sink Lakes, sentence 4).

41. As to Claim 9, Haitjema and Deal et al teach: wherein outflow includes interflow (Haitjema: page 6 of 15, paragraph 1; page 7 of 15, "After these inspections...the net recharge rate that the lake receives").

42. As to Claim 10, Haitjema and Deal et al teach: wherein outflow includes groundwater flow (Haitjema: page 2 of 15, "High-k Lakes", paragraph 1; page 7 of 15, "After the DOS box closes you can click on the flux inspection line and read on the status bar the total groundwater flow into or out of the lake").

43. As to Claims 20 and 11, Haitjema and Deal et al teach: receiving constraints, receiving an objective function and repeatedly performing the simulation varying parameters based on user provided constraints to optimize an objective function (Haitjema: page 7 of 15, last paragraph-page 8 of 15, first 2 sentences; pages 11, 12 and 13 of 15, "Solution Strategies and Lake Water Balance").

44. Claims 3, 13, 14, 17, 24, 25, 27-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haitjema and Deal et al as applied to claims 1, 16 and 26 above, and further in view of Muller ("Advanced Drawing Tools Aid Network Planning", International Journal of Network Management, Vol. 7, pages 324-333, 1997).

45. Haitjema and Deal et al teach wherein the generating of the graphical representation includes: interconnecting elements in the design representing dependencies (Haitjema: page 4 of 15, "Defining Inlet and Outlet Streams", sentence 1) and the use of icon based modeling techniques to create models representing sources of water and the flows between them (Deal: page 6 of 25, paragraph 3, "Such an alternative..."; page 12 of 25, first paragraph, "Using iconic..."), rainfall, imperviousness (Deal: page 15 of 25, paragraph 3, sentence 3, "The model also evaluates...") and evapotranspiration (Haitjema, page 8 of 15, "Line-sink Lakes, sentence 4) factors.

46. Haitjema and Deal et al do not expressly teach user instructions on the placement and interconnection of icons, dragging and dropping icons, the icons representing areas, rainfall, evapotranspiration, impervious areas and pervious areas,

wherein multiple outflows can be combined into a single outflow, and wherein an outflow can be divided into multiple outflows.

47. Muller teaches the Visio Technical drawing tool that employs easy to use and learn graphics capabilities that provides a high degree of intelligence and programmability to the designer through simplified graphical representations of complex projects, thereby enabling more people to understand and participate in the planning process (Conclusion) wherein the user can (claims 27, 28) drag and drop iconic shapes into a drawing space and (claims 3, 13, 14, 17, 29) connect them together using a stencil tool or connector tool (page 327, column 1, paragraph 2 and 3, "The user adds...") wherein it is understood that the user can define multiple outflows into a single outflow and dividing an outflow into a multiple outflow; and (claims 24, 25, 28) wherein the shapes themselves are programmable so they can behave like the objects they represent (page 325, paragraph 2, sentence 1, "The Visio shapes..."), therefore, they can be programmed to represent rainfall, evapotranspiration, sources of water, areas of land use, impervious areas and pervious areas.

48. Haitjema and Deal et al and Muller are analogous art since they are both directed to iconic modeling.

49. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the iconic based modeling and interconnecting as taught in Haitjema and Deal et al to include user instructions on the placement and interconnection of icons, dragging and dropping icons, the icons representing areas, rainfall and evapotranspiration, combining multiple outflows into a single outflow, and

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dividing an outflow multiple outflows as taught by Muller since Muller teaches the Visio Technical drawing tool that employs easy to use and learn graphics capabilities that provides a high degree of intelligence and programmability to the designer through simplified graphical representations of complex projects, thereby enabling more people to understand and participate in the planning process (Conclusion).

50. Claims 6 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haitjema and Deal et al as applied to claim 1 above, and further in view of Liaw et al ("Low-Impact Development: An Innovative Alternative Approach to Stormwater Management", Journal of Marine Science and Technology, Vol. 8, No. 1, pp. 41-49, 2000).

51. Haitjema and Deal et al teach the simulation of inflow and outflow of water through a landscape wherein objects representing sources of water and areas calculate the outflow and inflow of water through a landscape including water sources and areas of use based on the inflow and outflow from sources of water and areas.

52. Haitjema and Deal et al do not expressly teach wherein outflow includes runoff and infiltration.

53. Liaw et al teaches Low Impact Development (LID), a cost effective alternative approach to stormwater management and the protection of natural resources that provides tangible economic incentives to a developer to save more natural areas and reduce stormwater and roadway infrastructure costs (Conclusions and Summary,

paragraph 1), wherein steps are taken to minimize runoff and to increase infiltration (pages 2 and 3 of 12, "LID Basic Site Planning Strategies"), two examples of outflow.

54. Haitjema and Deal et al and Liaw et al are analogous art since they are both directed to the modeling and simulation of water flow in an urban development.

55. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the simulation of inflow and outflow from a landscape including water sources and areas of use as taught by Haitjema and Deal et al to include outflow such as runoff and infiltration as taught by Liaw et al since Liaw et al teaches Low Impact Development (LID), a cost effective alternative approach to stormwater management and the protection of natural resources that provides tangible economic incentives to a developer to save more natural areas and reduce stormwater and roadway infrastructure costs (Conclusions and Summary, paragraph 1).

56. Claims 4, 15 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haitjema and Deal et al as applied to claim 1 above, and further in view of Gaillard et al ("Modelling of Human Dimension on Soil Erosion Processes for Remote Sensing Applications", IEEE International Symposium on Geoscience and Remote Sensing, IGARSS '97, Vol. 1, pages 122-124, 1997).

57. Haitjema and Deal et al teach the simulation of inflow and outflow of water through a landscape including water sources and areas of use wherein objects representing sources of water and areas calculate the outflow and inflow of water

through a landscape including water sources and areas of use based on the inflow and outflow from sources of water and areas.

58. Haitjema and Deal et al do not expressly teach wherein objects also calculate sediment amounts, wherein the attributes of an area include size of the area.

59. Gaillard et al teaches improvements on the distribution of water and sedimentation flows in a hydrological and erosion model in order to allow a better assessment of the human impact on soil erosion processes (Page 122, column 2, paragraph 2, "In order to allow...") wherein sediment transfers are accounted for (page 122, "Watershed Erosion Simulation", paragraphs 1 and 2) and wherein the size and orientation of plots influence the erosion process (Introduction, paragraph 1).

60. Haitjema and Deal et al and Gaillard et al are analogous art since they are both directed to simulating the flow of water through a landscape development.

61. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the simulation of inflow and outflow through a landscape including water sources and areas of use as taught by Haitjema and Deal et al to further include objects that calculate sediment amounts and attributes of an area that include size of the area as taught by Gaillard et al since Gaillard et al teaches improvements on the distribution of water and sedimentation flows in a hydrological and erosion model in order to allow a better assessment of the human impact on soil erosion processes (Page 122, column 2, paragraph 2, "In order to allow...") and since the size of a plot influences the erosion process (Introduction, paragraph 1).

***Conclusion***

62. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

63. Jin et al (US Patent 7,039,565) teaches a hydraulics software system for a one-dimensional hydro-dynamic numerical model for modeling unsteady flows in sewer and storm water urban drainage systems.

64. Davies et al (US Patent 6,247,019) teaches a GIS system in which topological information is classified as geometrical objects and uses a region identifier and geometry attribute to reconstruct each topological feature.

65. Majumdar et al (US Patent 6,748,349) teaches analyzing the steady state and transient flow in a complex fluid network.

66. Environmental Protection Agency, ("Stormwater Modeling Projects", Stormwater and Urban water Systems Modeling Events (SWIMM conference), Toronto, Canada, 1999) teaches approaches to urban watershed modeling research and provides updates on current SWIMM related projects.

67. DeMartino et al ("Object-Oriented GIS 101: New GIS Data Model Features Intelligent Objects", CE News, November 2001) teaches a geographic information system geographic model.

68. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mary C. Jacob whose telephone number is 571-272-6249. The examiner can normally be reached on M-F 7AM-5PM.



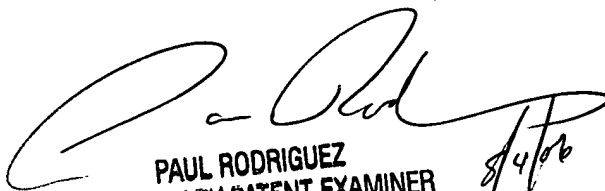
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Rodriguez can be reached on 571-272-3753. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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Mary C. Jacob  
Examiner  
AU2123

MCJ  
8/4/06

  
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